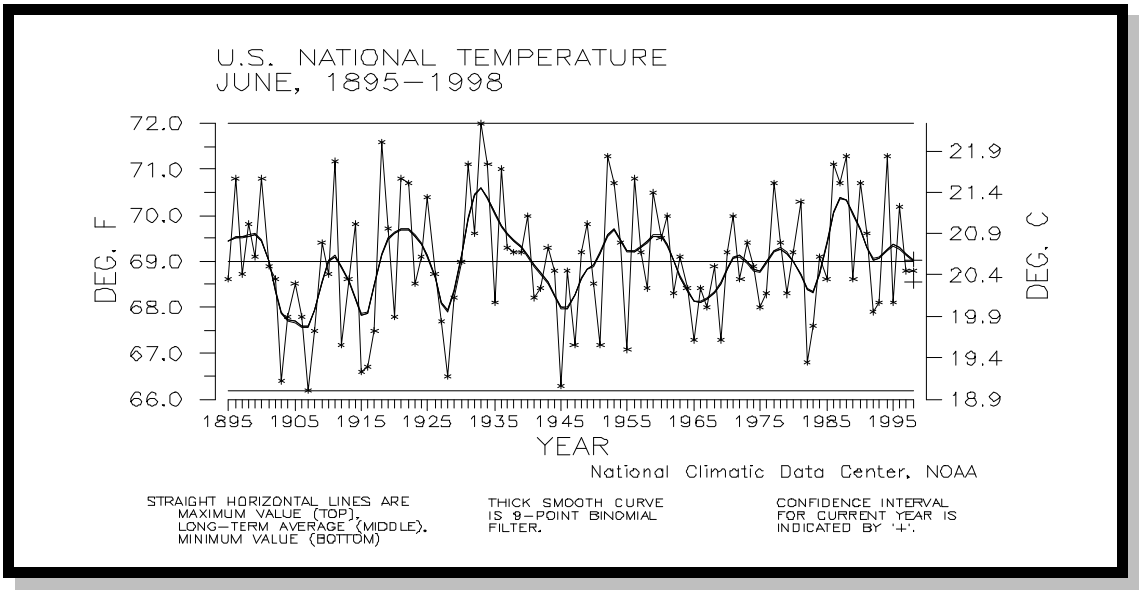
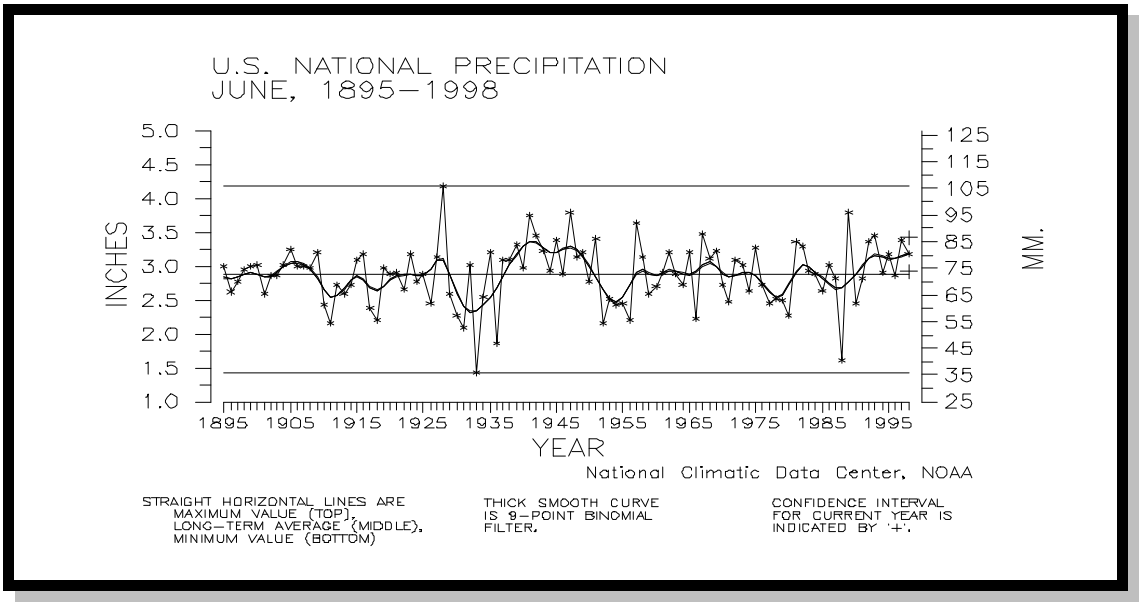
Monthly Activity Report

June 1998





Preliminary data for June 1998 indicate that temperature averaged across the contiguous U.S. was near the long-term mean ranking as the 48th coolest June since 1895 (top figure). Over 20 percent of the country was much warmer than normal, while over 11 percent of the country was much cooler than normal.

Preliminary data for June 1998 indicate that precipitation averaged across the contiguous U.S. was above the long-term mean ranking as the 28th wettest June since 1895 (bottom figure). Nearly 23 percent of the country was much wetter than normal while about nine percent was much drier than normal.

DIRECTOR'S HIGHLIGHTS

Vice President's El Niño/Climate Press Conference

National Climatic Data Center (NCDC) Director Thomas R. Karl participated in Vice President Gore's El Niño/Climate Press Conference on June 8, 1998, in the White House Roosevelt Room. NCDC prepared four posters: (1) Top 10 El Niño Events of this Century; (2) Global Surface Mean Temperature Anomalies for 1880 to the Present (includes May 1998); (3) U.S. Temperature and Precipitation Anomalies for Jan-May, 1895-1998; and (4) the warmest (1998) and second warmest Global Temperature Index values (all since 1988) for each month, January through May, 1880-1998. Dr. Alan Strong of the National Environmental Satellite, Data, and Information Service (NESDIS) Office of Research also participated. NESDIS also provided data and imagery on global fire activity and vegetation stress.

Climate Aspects of the Florida Wildfires

On June 29th, David Easterling and Mike Changery of the National Climatic Data Center (NCDC) traveled to Daytona Beach, FL, as part of the Vice President's entourage, and briefed Mr. Gore on the long-term climatological aspects of the Florida climate for the past winter, spring and current part of the summer. They highlighted the combination of an exceptionally wet winter and early spring, fueled by the strongest El Niño event on record, and the exceptionally dry weather since, while putting these climate events into historical perspective. Other important briefing points included: El Niño events have been increasing in frequency since the late 1970's; November-March was the wettest on record for North Central FL, and April-June was the driest on record. For Daytona, Tampa, and Tallahassee, June was the warmest month of all time; and April-June for North Central Florida will be the 3rd warmest on record. The 20 days with high temperatures over 95 degrees Fahrenheit that Melbourne, FL, experienced in June has less than a 1/1000th probability of occurring.

Congressional Briefings

Dr. David Easterling of the National Climatic Data Center (NCDC) participated in a round of briefings in Washington, D.C., on "Increased Flooding Events and Climate Change: Consequences for Human Health" sponsored by the Harvard Medical School Center for Health and the Global Environment; Environmental Media Services and the Environmental and Energy Study Institute. Other participants were Dr. Tim Ford of the Harvard Center, Dr. Kevin Trenberth of the National Center for Atmospheric Research, and Dr. Joan Rose of the Marine Sciences Department at the University of South Florida. There were four different sessions during which Dr. Easterling discussed trends of extreme one-day and multi-day precipitation events, and trends of temperature extremes.

Climate Products Review Workshop

A very successful Climate Products Review Workshop was held at the National Climatic Data Center (NCDC) June 23-26, 1998. The workshop brought together the major providers of climatic data to discuss the condition of the climate services system, and to recommend items for future work or enhancement. The staff of NCDC, the regional climatologists and user services personnel from the Regional Climate Centers (RCC), representatives from the U.S. Department of Agriculture, and the National Weather Service's Climate Prediction Center discussed the climate services system. A list of recommendations has been issued.

Transmission of Daily Cooperative Observer Reports

The first transmission of daily Cooperative Observer reports as collected in real-time has been received at the National Climatic Data Center (NCDC). These data were processed by the Southern Regional Climate Center. This represents the first step in having all six Regional Climate Centers (RCC) send these observations on a daily basis. It is expected that some 2,500 stations might become available. These data will be used in the ongoing assessment of climate conditions and in providing more timely data to customers. Customer Service representatives from each of the RCCs met at NCDC to discuss climate products present and future.

CLIMATE DATA AND INFORMATION SERVICES

✦ Data Base Development

Year 2000 Project Support

Roger Winchell, of the National Climatic Data Center (NCDC), provided the National Oceanographic Data Center (NODC) with a sample of one of the NCDC Web pages and html. NODC is developing its own Year 2000 Web page for use by NODC personnel to check and update the status of hardware and software systems remediations that need to be done for Year 2000 compliance. NODC has been coordinating with NCDC and the National Geophysical Data Center to discuss their Year 2000 measures.

COMPS Build 2.0

The Build 2.0 version of the Customer Order Management Processing System (COMPS) was delivered on schedule by UNISYS Corporation to the Government, and successfully installed at the National Climatic Data Center (NCDC) and National Oceanographic Data Center (NODC) during the week of June 15, 1998. The National Geophysical Data Center (NGDC) successfully installed the Build 2.0 version of COMPS at their site on June 22. UNISYS also provided informal user training to personnel from all three data centers. NODC is currently using COMPS operationally, while NCDC and NGDC will perform parallel testing prior to COMPS becoming fully operational at their respective sites.

Snow Data

A new data set of observed snowfall extremes and derived return period statistics for 8,718 Cooperative stations in the contiguous U.S. and Alaska has been added to the National Climatic Data Center's (NCDC) TD-9641. Of these, 7,464 were identified as "current" stations and were provided to the Federal Emergency Management Agency (FEMA) to aid FEMA in federal snow disaster declarations. The four time frames/parameters are: one-day, two-day, and three-day extreme snowfall, and August-July seasonal total snowfall. The statistics include observed extreme value, and snowfall amount corresponding to four return periods: 10-year, 25-year, 50-year, and 100-year. Also included are number of years with non-missing data, and number of years with non-zero data. The statistics are based on TD-3200 data from 1948-1996. Also, a data set of 1961-1990 normals for snowfall and snow depth for over 3,000 stations in the U.S. has been added to NCDC's TD-9641. There are 3,295 stations in this data set, of which 258 are First Order (WBAN) stations and 3,037 are Cooperative (COOP) stations.

✦ Data and Information Distribution

Transitioning Free Serial Publication Customers to the Internet

The National Oceanic and Atmospheric Administration (NOAA) National Data Centers (NNDC) have embarked on a modernization program under the NOAA Virtual Data System (NVDS) initiative. One of the principal goals of this initiative is to establish an On-Line Data Store concept of operations that will provide customers direct electronic access to many products, including the serial publications produced by the National Climatic Data Center (NCDC). Electronic access to these serial publications (LCD, CD, HPD, SD, MCDW) will improve delivery time to customers by several weeks and will significantly improve the efficiency of NCDC customer service operations. As a part of this initiative, letters are being sent by NCDC that inform customers receiving free hard copies of the serial publications that this method of distribution will no longer be available, and also provide instructions for obtaining the publications electronically. Free access to the appropriate serial publication(s) is available to these customers (NOAA, NWS, DoD, COOP Observers, and Domestic Exchange) by accessing the NCDC home page.

NEXRAD Data Provided to NTSB

The National Transportation Safety Board (NTSB) requested that the National Climatic Data Center (NCDC) plot the flight track of Air'Tran Flight 426 on a reflectivity image to aid in their flight-mishap investigation. Flight 426, en route from Atlanta to Chicago, flew too close to a thunderstorm. Wind and hail cracked the windshield, ripped off the nose cone, and damaged the on-board radar. The flight had to make an emergency landing at Chattanooga, TN. The flight-track plot showed the plane skirted just west of the most active area of the thunderstorm cell.

NEXRAD Data Central Collection Facility

The National Weather Service (NWS) continues to plan for establishment of a central collection facility for Next Generation Weather Radar (NEXRAD) Level III data. NWS Office of Systems Operations (OSO) personnel discussed with NCDC ways to transfer the data to NCDC. OSO will determine costs of establishing T1 and T2 transmission lines to NCDC, and will consider additional transfer of selected images via the Internet in Web-displayable format.

Information Help Desk

The National Climatic Data Center has developed and implemented a Web-based information sharing system that allows people to view and share information on a variety of topics, such as Windows 95, MS Mail, WordPerfect, etc. The system is similar to an Internet List Server but more functional. E-mail messages containing information, updates, and helpful tips are only distributed to subscribed users. Since users select the categories they want to subscribe to, no unwanted e-mail is generated. Everyone can contribute information to any category and search the system's historical database to access previously distributed data. Users receive all updates when other users "post" news items. The new system already has 33 categories covering a wide variety of topics which also accommodates non-information technology issues. The Info Desk is expected to relieve most, if not all, of the need for "shared" folders in the electronic mail system.

GOES Data User's Guide Available

The National Climatic Data Center (NCDC) has completed a new *GOES Data User's Guide* which replaces its predecessor last revised in 1985. The new guide includes historical information on the Geostationary Operational Environmental Satellites (GOES), a GOES mission summary statement, details on the GOES sub-systems' functions with the emphasis on the current GOES I-M systems, and formats of GOES data and

products archived at NCDC. Examples of image products are provided, as well as documentation on digital and derived products, which include Cloud Drift Winds, Water Vapor Movement Winds, Automated Surface Observation System (ASOS), Supplemental Cloud Height/Amount and Sounding Products. Printed copies are available for a nominal charge; a free on-line version will be available later this summer.

Billion Dollar Weather Disaster Report

The National Climatic Data Center (NCDC) has updated its report on billion dollar weather disasters of 1980-1998. The report now includes 33 weather-related disasters during this period. Twenty-seven of those events occurred during 1988-1998, with total damages/costs exceeding $150 billion. The informational sources for the report include the National Weather Service, the Federal Emergency Management Agency, the Regional Climate Centers, State Climate Centers, and state emergency management agencies. The latest event is the El Niño related severe weather in the Southeast (tornadoes and flooding) during the winter and spring of 1998, with approximately $1 billion in damages and at least 132 fatalities. An on-line version of the report, which includes links to detailed reports describing many of the events, is available from: http://www.ncdc.noaa.gov/ol/climate/severeweather/severeweather.html

Observation Station Photographs Added to WebCliServ

WebCliServ, the National Climatic Data Center's (NCDC) on-line inventory system, has been modified to provide access to station photographs as they become available (currently limited to one station). NCDC has plans to ingest photographic images from the National Weather Service Automated Surface Observation System (ASOS) sites along the East and Gulf Coasts, and has also solicited funding to acquire and ingest photographs from approximately 8,000 Cooperative Observation Stations across the U.S. Photographs are taken at 45 degree angle increments to show obstructions in each direction. To view an example of this new feature, access WebCliServ: http://www.ncdc.noaa.gov/ol/climate/stationlocator.html and search on station name Miami Opa Locka. After reaching the Miami Opa Locka screen, click on "ASOS Photographs" under the city/state/country line.

Flight Data Provided to FAA

The National Climatic Data Center (NCDC) provided selected data from the Sierra Cooperative Pilot Project to the Federal Aviation Administration (FAA) Technical Center in Atlantic City, NJ. The data were from a portion of February 1985, and were from weather research flights which collected data for the Bureau of Reclamation from 1977 to 1986. The FAA will be using the data to study in-flight aircraft icing. This study is part of a broader program in response to a Presidential proclamation to improve aviation safety tenfold within 5 years, and twentyfold within 10 years. From that proclamation, the National Aeronautics and Space Administration (NASA) created the Aviation Safety Program (AvSP), and within AvSP, the detection and avoidance of in-flight icing are being addressed. NASA, the FAA Technical Center, and the Army's Cold Regions Research and Engineering Laboratory organized a cooperative research program to accelerate development of systems for remotely detecting icing conditions in the flight path. This was also a topic of discussion at the June 8-11 International Workshop on Atmospheric Icing of Structures in Reykjavik, Iceland. There will be other multi-agency efforts involving other aspects of aviation safety, and climatological data (including satellite and radar data) will play a role in these efforts.

✦ Research Customer Service Group Requests

GSOD Data Used in Testing

An aircraft manufacturing company obtained historical Global Summary of the Day (GSOD)

data from 1994 to the present via the National Climatic Data Center (NCDC) Web site for use in design specifications in their aircraft operations. The company is currently compiling a list of airports around the world for use in takeoff performance estimates for vehicle design. The main airfield data base the company is using has been acquired through the use of the Table Formatted Aeronautical Data Set (TFADS) released by the National Imagery and Mapping Agency. The TFADS database contains information about various airports around the world in terms of a four-character identifier, and Lat/Long (deg/min/sec) positions. The GSOD database will supplement the main database with additional meteorological parameters, such as temperature and pressure, beginning with the 1994 data. The additional data will aid the company in their design specifications research projects for various global airports.

✦ Satellite Data Requests

Dust Storm Detection from Space

Dave MacKinnon of the U.S. Geological Survey (USGS) at Flagstaff, AZ, is chief investigator of a project which may prove the viability of using 1-kilometer resolution Geostationary Operational Environmental Satellite (GOES) visible imagery for detecting even mesoscale dust storms and determining the source regions of the dust. Preliminary research suggested this could be done, although the highest spatial resolution for GOES data is only 1-kilometer. The USGS is interested in spring dust storms in the Southwest because of their impact on topsoil availability and quality. Mr. MacKinnon contacted the National Climatic Data Center's (NCDC) Satellite Services Group and ordered both GOES 8 and GOES 9 data covering the western half of the U.S. for hazy/dusty days, paired with clear dates, for several days and times in April 1997 and April 1998. Data will be ftp'd from the National Oceanic and Atmospheric Administration (NOAA) GOES archive and the USGS will then process their own images using their own image processing software. Images from the east and west GOES satellites taken at the same time will be used to study the same area to see if different viewing angles help in the dust detection.

✦ Congressional Requests

Tornado Data Supplied to Congressman Frank Lucas

The National Climatic Data Center (NCDC) supplied several lists of tornado-related data to the office of Congressman Frank Lucas of Oklahoma. The Congressman's office is investigating the most severe tornadoes in U.S. history. NCDC supplied two of its own lists being prepared for Web page display. These were the "List of F5 U.S. Tornadoes Since 1880" and "U.S. Tornado Disasters Since 1880." Two other Web page lists downloaded from the National Weather Service's Storm Prediction Center were also supplied. These were "The 25 Deadliest U.S. Tornadoes" and "The 10 Costliest U.S. Tornadoes." The lists show a pattern consistent with what is known of Oklahoma's location in Tornado Alley, demographics, and disaster preparation. Though 11 of the 92 F5 tornadoes have occurred solely or in parts of Oklahoma, the death toll is surprisingly low due to lower population densities and excellent tornado preparedness among the population.

✦ Requests from News Media

Radio Interview

The National Climatic Data Center's (NCDC) Michael Crowe was interviewed by radio station WBUR in Boston concerning the abnormal weather and climate conditions which plagued the U.S. this year, which led to such events as the Florida wildfires and floods in the Midwest. Mr. Crowe noted that while extreme events are not uncommon, the very intense El Niño event of 1997-98 has contributed to the occurrence of anomalous conditions in this country and across the globe, including the record-setting warmth for 1998. He also said there has been an increase in the

frequency of El Niños in the last 20 years and scientists are studying the possible relationship between this increase and global climate change.

Cleveland Radio Addresses Weather Issues

Tom Moore of WTAM Radio, Cleveland, OH, contacted the National Climatic Data Center for a summary of recent monthly temperature and precipitation trends for the Cleveland area. The data revealed a slightly wetter than normal winter and spring (especially April), but the outstanding aspects were the low seasonal snowfall total (34.0 inches, lowest since 1957-58) and the warm January-February average temperatures (warmest since 1932). The data were used on a show dealing with agricultural issues.

✦ Regional Climate Centers

NCDC/RCC Coordination

The National Climatic Data Center (NCDC) and the Regional Climate Centers (RCC) coordinated to get near real-time cooperative weather observer data disseminated to NCDC. They also participated in the Climate Products Review Workshop. Several recommendations resulted from the workshop group.

RCC Presentations

All Regional Climate Centers (RCC) were busy answering questions and giving presentations on El Niño, La Niña, hot weather, and dry weather climatology presentations. The Southeastern Regional Climate Center (SERCC) quickly developed a series of special tabular, graphical, and cartographic products for the National Climatic Data Center, the U.S. Department of Agriculture, the U.S. Forest Service, the Florida Department of Forestry, and the Governor of Florida in support of Vice President Gore's Florida visit. These products defined Florida's unusual heat, drought, and fire conditions. These products were also put on the SERCC Web site.

New WRCC Metadata Graphic

The Western Regional Climate Center (WRCC) placed another metadata graphic on the product list for each station, displaying whether data are available for each day in the digital record (since 1870). The five main Summary Of the Day elements are shown as color displays, and each missing day in the record is visible. This visualization aid is very helpful for those wishing to choose stations with sufficient data, or lack of gaps, for various types of data analysis.

SCIENTIFIC AND PROFESSIONAL ACTIVITIES

✦ Working Groups/ Committees/Meetings

Climate and Health

Rob Quayle, of the National Climatic Data Center, attended a meeting on Climate and Health called by the Office of Global Programs. The National Oceanic and Atmospheric Administration (NOAA) will cooperate with another government agency (as yet undetermined) to begin exploring how NOAA climatic data/predictions can assist in prediction and prevention of climate-related disease.

Insurance Seminar

Mike Changery, of the National Climatic Data Center (NCDC), attended the Applied Insurance Research (AIR) Seminar on Managing

Catastrophic Risk, May 19-22 in Colorado Springs, CO, as an invited speaker. He led discussions on current and anticipated changes in tropical and extra-tropical system intensities, frequencies, and areas of occurrence as a consequence of a warming world. The seminar was attended by over 130 insurance representatives from the U.S. and other countries. Clients use AIR modeled results to analyze risk exposure and to optimize their portfolios. Mr. Changery will provide AIR with samples of additional data available from NCDC to better model regional and local impacts on insurance risk by severe wind episodes. Policy implications: There has been a significant increase in insured and uninsured losses caused by wind in recent decades. This has occurred at a time when tropical cyclone activity has been relatively low, but exposure caused by economic development has increased. The question arises: Have the frequencies and/or intensities of various types of wind storms increased over time? Although National Oceanic and Atmospheric Administration storm data could be applied, temporally and spatially homogeneous times series of these data have not been developed. The extreme events component of the FY 2000 Natural Disaster Reduction Initiative addresses this shortcoming.

Joint Action Group for Observations (JAG/OBS)

The primary goal of the JAG/OBS is to maximize the quantity and quality of meteorological and oceanographic data reaching the major processing centers. The group met on June 23, 1998, in Silver Spring, MD. Art DeCotiis, of the National Climatic Data Center (NCDC), gave a presentation on the Center's Gateway Data Acquisition Project, data source comparisons studies, and quality control products. The data quantity comparison study for marine data shows the observation count from the Gateway to be about 15 percent higher than that of the traditional National Centers for Environmental Prediction (NCEP) Office Note source. The NCEP representatives attributed this difference to observations not arriving in time to meet NCEP operational data collection cutoff times. The group was very interested in receiving the Center’s upper air and marine data quality control reports. Arrangements are being made to routinely distribute these reports. The group is very pleased with NCDC's growing involvement in the arena of near-real-time data acquisition monitoring and quality control.

Lecture on Climate Trends

Alan Basist, of the National Climatic Data Center (NCDC), was invited by the Office of Global Programs to give a 30-minute public lecture on climate trends in the Mississippi River Basin at the GEWEX Continental-scale International Project (GCIP) Mississippi River Climate Conference in St. Louis June 8-12, 1998. This talk was the lead-in to a panel on the future of the Mississippi River Basin.

Presentation/Meetings at USGS EROS Data Center

Kevin Gallo, of the National Climatic Data Center, presented a seminar on "Meteorological and Climatological Applications of Land Use/Land Cover Data" at the U.S. Geological Survey's EROS Data Center, Sioux Falls, SD, June 2, 1998. Meetings at the facility included discussions of ongoing projects funded by the National Oceanic and Atmospheric Administration's Office of Global Programs, and the National Aeronautics and Space Administration, with the project co-investigators. Additional discussions included briefings on the Center's current research programs and potential areas for future collaboration.

IWAIS 1998 Conference

The National Climatic Data Center's (NCDC) Neal Lott presented a paper (co-authored by Kathy Jones of the U.S. Army Cold Regions Research and Engineering Laboratory) during the June 8-11, 1998, International Workshop on Atmospheric Icing of Structures (IWAIS) conference in Reykjavik, Iceland. The paper, entitled “Using U.S. Weather Data In Modeling Ice Loads From

Freezing Rain," describes the collection and archival of weather data, the weather elements that are significant in modeling ice loads in freezing rain, the meteorological instruments, the data accuracy and problems, and decisions that must be made by users of the data in modeling ice loads. It also includes examples of using the data for certain stations to estimate extreme ice loads. Participation in this conference is closely related to Mr. Lott's involvement with the American Society of Civil Engineer's (ASCE) ice/snow loads committee. This committee is developing a freezing rain climatology for the U.S. showing the 50-year mean recurrence values for radial ice thickness (e.g., around a cable).

ASHRAE Meeting/Visit to Environment Canada

The National Climatic Data Center's (NCDC) Marc Plantico participated in the 1998 Annual American Society of Heating, Refrigerating, and Air-conditioning Engineers (ASHRAE) meeting held June 20-24, 1998, in Toronto, Canada. He is the National Oceanic and Atmospheric Administration's representative on the Weather Information Technical Committee, whose purpose is to promote the effective use of climate data and information in ASHRAE applications. The Weather Information Committee prepares work statements for weather related research projects, monitors these projects, maintains the weather chapter in the ASHRAE Handbook of Fundamentals, and provides climate data used in the development of standards. Mr. Plantico also visited Environment Canada while in Toronto to discuss mutual projects and data exchange between the two Centers. While there, he gave a presentation on the U.S. Climate Atlas project and NCDC web activities.

National Ocean Conference

Ralph E. Meiggs, of the National Climatic Data Center's (NCDC) Satellite Services Branch, was detailed to the National Ocean Conference (NOC) for six weeks to provide technical support to the NOC documentation team. The conference, June 11-12, 1998, was held to celebrate *The Year of the Ocean* and was the first "Ocean Conference." His duties included serving as an environmental science staff resource with an emphasis on remote sensing, and as the documentation system manager. The Vice President was very pleased with the conference and the NOC staff.

ATOVS/AMSU-B Critical Design Review

The National Climatic Data Center (NCDC) participated in the Critical Design Review for the Advanced TIROS Operational Vertical Sounder (ATOVS) and Advanced Microwave Sounding Unit-B (AMSU-B) Radiosonde Matchup Database archive systems. NCDC will archive radiosonde metadata as part of the new NOAA-15 ATOVS and AMSU-B sounding systems. The system should be operational by spring 1999.

POES Program Review

The National Climatic Data Center (NCDC) participated in the monthly Polar-orbiting Operational Environmental Satellite (POES) Program Review meeting on June 18. POES Program Manager Mike Mignogno reported that the National Oceanic and Atmospheric Administration (NOAA) is holding the National Aeronautics and Space Administration (NASA) to the 60-day turnover schedule for NOAA-15; NOAA will assume control on July 9. The Automatic Picture Transmission (APT) antenna, previously stuck, has deployed fully, and all spacecraft instruments are on and functioning. However, there are some instrument problems under investigation. The Solar Backscatter Ultraviolet Spectral Radiometer (SBUV) instrument on NOAA-14 is providing ozone total and profile data again after a new giant step procedure was implemented.

METOP Ground Systems Working Group

The National Climatic Data Center (NCDC) participated in the Meteorological Operational

Satellite (METOP) Ground Systems Working Group meeting on June 26. The National Environmental Satellite, Data, and Information Service (NESDIS) is waiting for the latest Program Implementation Plan (PIP) from the European Organization for Exploration of Meteorological Satellites (EUMETSAT) for review. Twenty-three of 25 PIP issues have been settled, including free exchange of software between EUMETSAT and the National Oceanic and Atmospheric Administration (NOAA) after mutual agreement. The U.S. Cross Track Infrared Sounder (CRIS) instrument is being considered as a substitute for Infrared Atmospheric Sounding Interferometer (IASI) if the latter cannot meet the deadlines. The ground systems contract is scheduled for kickoff in early 1999, with readiness by early 2003.

✦ Visitors

Visiting Scientist

Claude Duchon will visit this summer to assist with plans and development of the next generation of operational quality control systems.

✦ Publications

Coast Pilot

Twenty-six weather-related narratives, and 14 climatological tables, have been updated for the *United States Coast Pilot* Volume #8. This volume covers the area commonly referred to as the Alaska panhandle. The *United States Coast Pilot* is a nine volume set of nautical books that cover a wide variety of information important to navigators of U.S. coastal and intracoastal waters and waters of the Great Lakes. Subjects of the Coast Pilot include but are not limited to, channel descriptions, anchorages, bridge and cable clearances, currents, tide and water levels, prominent features, pilotage, towage, weather, ice conditions, wharf descriptions, dangers, routes, small-craft facilities, and Federal regulations applicable to navigation. The volumes are being completed out of volume sort.

EMPLOYEE ACTIVITIES

✦ EEO and Community Outreach

Science Teacher Workshop

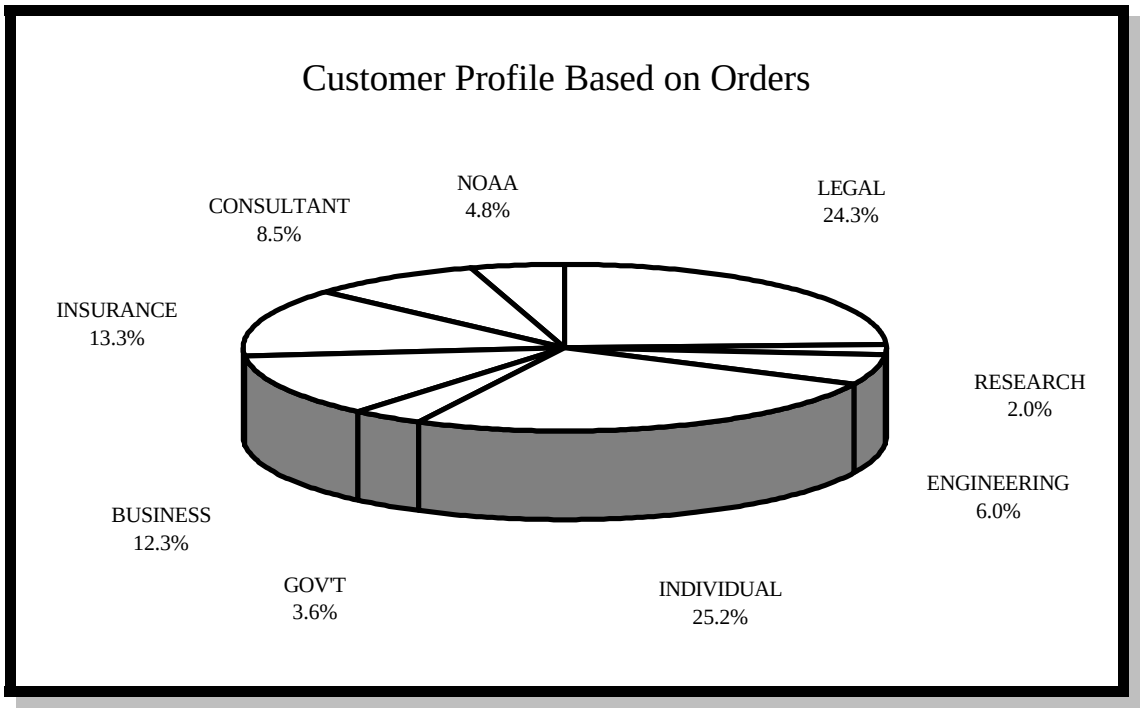
The National Climatic Data Center (NCDC) hosted a one-day science teacher workshop on June 22. Approximately 20 teachers from Anderson-Oconee-Pickens, SC, attended. The teachers are part of the South Carolina State Systemic Initiative with the South Carolina Math and Science Hub. Tom Ross of NCDC provided interactive Web training in climatology and related issues using NCDC's Web site.

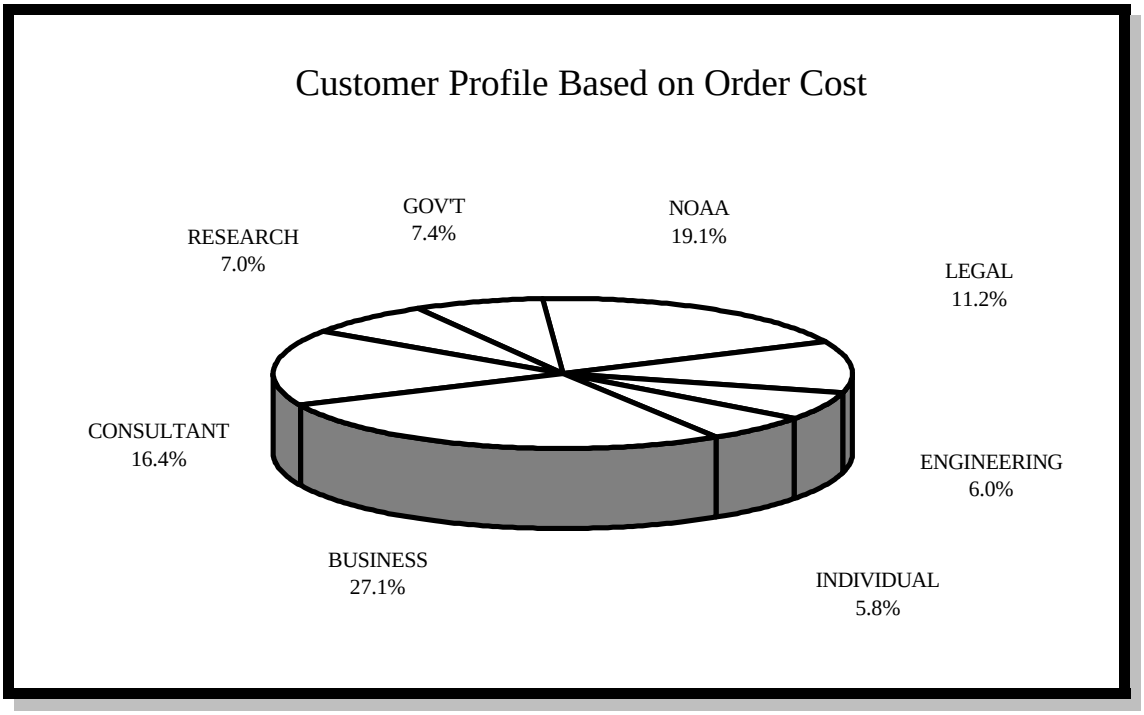
✦ Personnel Resources

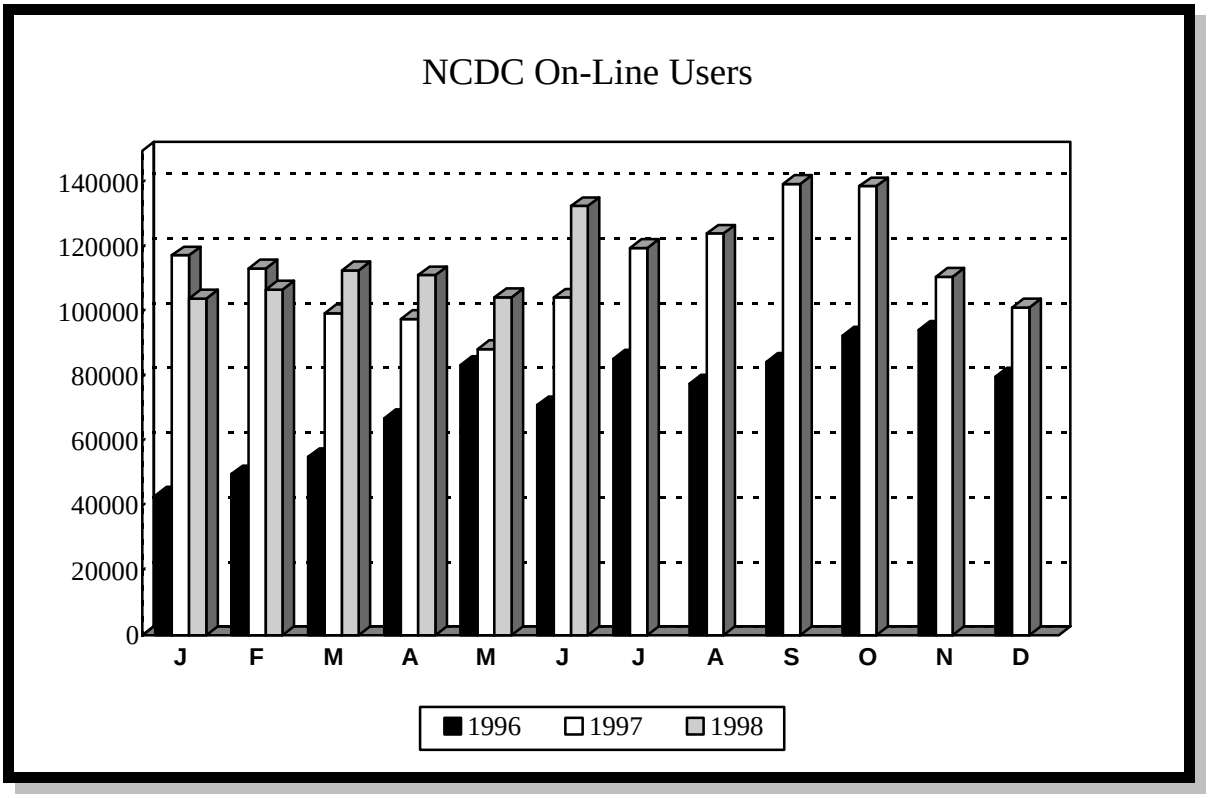
New Employee

Carol Tang, a contract programmer hired by Marada Corporation, began work for the Climate Services Division on June 8. She has experience and training with Oracle and several programming languages. She will be working on Unisys-migration programs, including Oracle programming for data sets which will be serviced from Oracle.

The following charts and graphs show the latest National Climatic Data Center user and data statistics.



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20000
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J F M A M J J A S O N D
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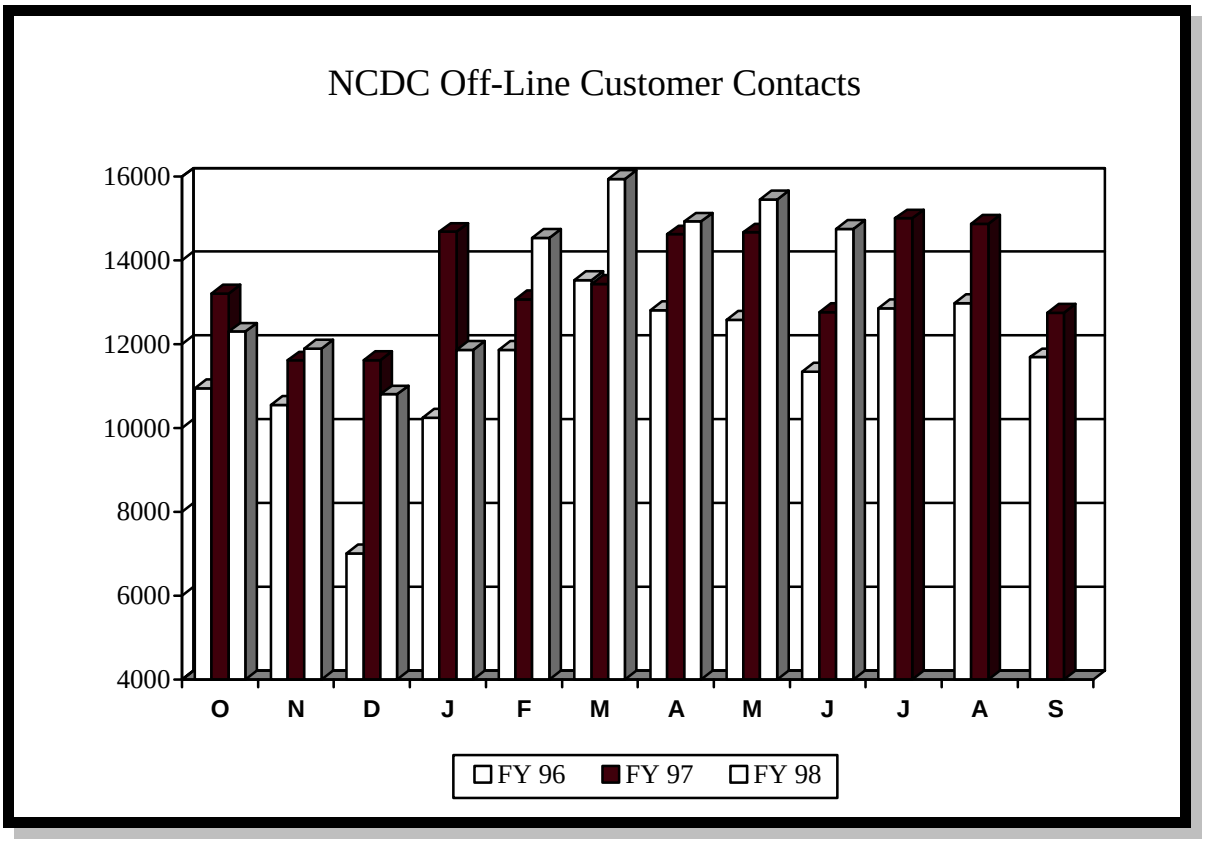
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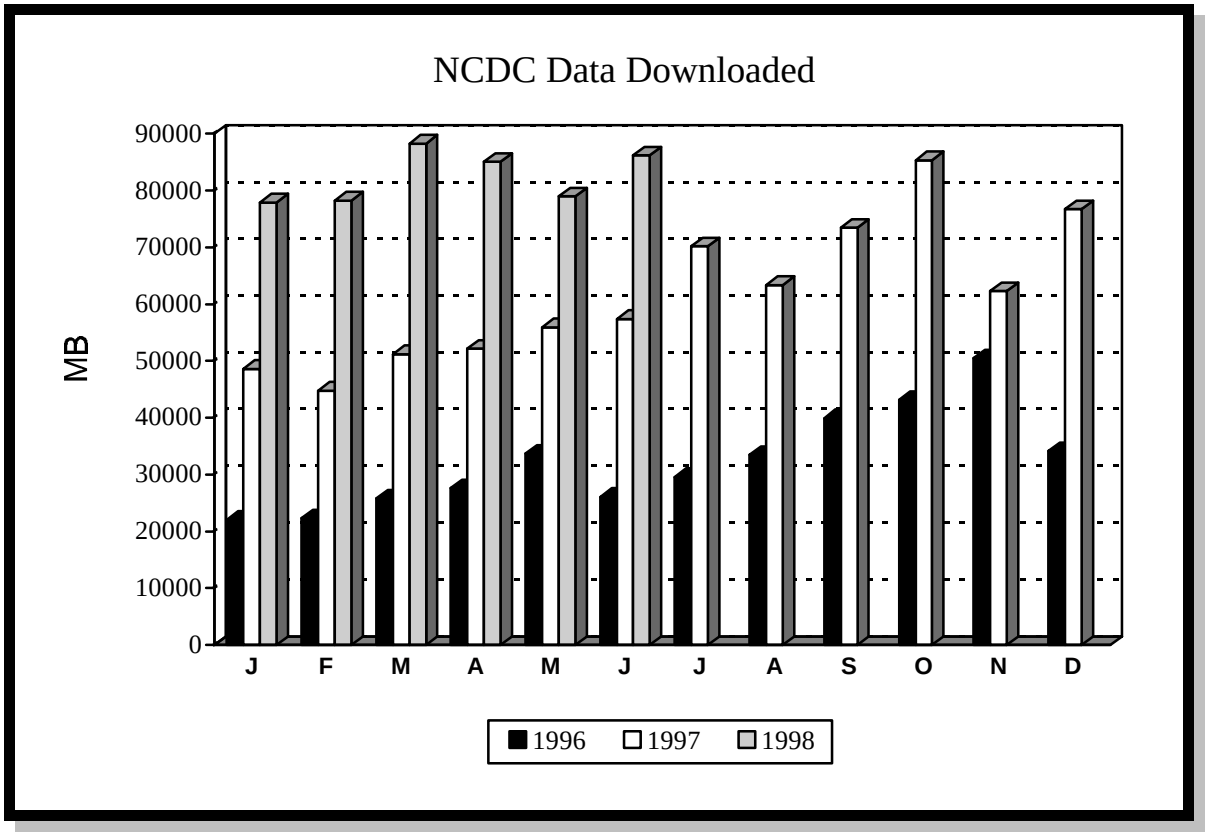
4000
O N D J F M A M J J A S
FY 96 FY 97 FY 98


NCDC Data Downloaded
MB
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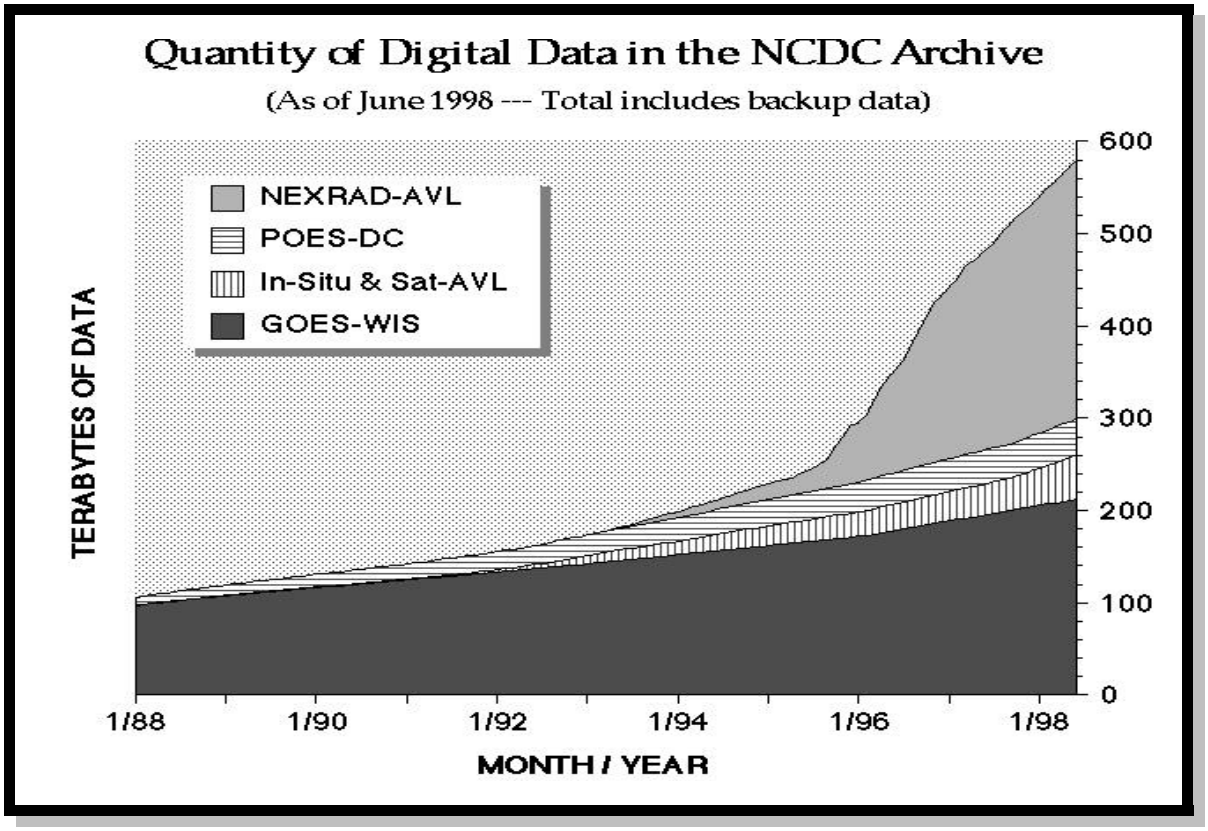
70000
60000
50000
40000
30000
20000
10000
0
J F M A M J J A S O N D
1996 1997 1998


Quantity of Digital Data in the NCDC Archive
(As of June 1998 --- Total includes backup data)
NEXRAD-AVL
POES-DC
In-Situ & Sat-AVL
GOES-WIS
TERABYTES OF DATA
600
500
400
300
200
100
0
1/88
1/90
1/92
1/94
1/96
1/98
MONTH / YEAR